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ABSTRACT

A "working party" (a decision-making group similar to the quality circles concept) comprised of public elementary school personnel (administrator, regular and special education staff), and parents, university special education faculty and graduate students worked cooperatively to develop and implement a manual sign inservice training package to improve the communication environment for severely handicapped elementary school students. A series of four half-day workshops was conducted during which school staff (teachers, aides, custodians, support staff, parents, and bus drivers) learned manual signs for a functional core vocabulary selected from a list generated by the school staff and students. Initial trends indicated that the total number of staff and students using manual sign increased. The process of planning and conducting the inservice training workshops yielded valuable lessons in several areas which are described: (1) the use of a working party; (2) selection of vocabulary; (3) development of the workshop format, activities, and materials; and (4) trends in observational/evaluative data. Also explored is the role of previous research and clinical observation in sequencing the manual signs assigned to the initial workshops to facilitate success. Enlargement of selected sign vocabulary and expansion of its use to parents and related school-community service people are mentioned briefly. An appendix lists activities used in the workshops. (Author/VW)

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IMPROVING THE COMMUNICATION ENVIRONMENT FOR CHILDREN WITH SEVERE HANDICAPS THROUGH MANUAL SIGN INSERVICE TRAINING

by

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IMPROVING THE COMMUNICATION ENVIRONMENT FOR CHILDREN WITH SEVERE HANDICAPS THROUGH MANUAL SIGN INSERVICE TRAINING

ABSTRACT

A working party, composed of Murdock Elementary School personnel (administrator, regular and special education staff, and parent) and Purdue University special education personnel (faculty and graduate students) worked cooperatively to develop and implement a manual sign inservice training package to improve the communication environment for severely handicapped students attending Murdock School. A series of four half-day workshops was conducted during which school staff (teachers, aides, custodians, support staff, parents, and bus drivers) learned manual signs for a functional core vocabulary selected from a list generated by the public school staff and students. The process of planning and conducting the inservice training workshops has yielded valuable lessons in several areas. The use of a working party, selection of vocabulary, development of the workshop format, activities, and materials, and trends in observational/evaluative data are discussed in this presentation. The role of previous research (and clinical observation) in sequencing the manual signs assigned to the initial workshops to facilitate success is also explored. The outcome of the project was multifaceted. Initial trends in the data indicate that the total number of staff and students using manual sign increased. Expansion of selected sign vocabulary, and expansion to parents and related school-community service people are mentioned briefly.

BRIEF HISTORY

For two years, six staff members from Murdock Elementary School, a faculty member and several special education graduate students at Purdue University and others have been collaborating on a sign inservice training project funded by the Lilly Endowment, Inc. of Indiana. . Murdock School is a public elementary school with thirteen regular education classrooms, grades kindergarten through sixth, and four special education classrooms, consisting of classrooms for students with physical handicaps, hearing impairment, multiple handicaps, and severe-to-profound handicaps. Students in the hearing impaired classroom were using manual signs prior to the beginning of this project. It had already been determined that a number of students in the multi-handicapped, physically handicapped, and severe/profoundly handicapped classrooms could benefit by learning some manual signs, and signs were reportedly being used by the speech pathologist with a few students. The major objectives of this project were to improve the communication environment for the students at Murdock School with severe communication disorders (other than those with a hearing loss) and to strengthen community school and university cooperation. However, we anticipated that the hearing impaired students would benefit from this project as well.

RATIONALE

The ability to communicate is a basic survival skill and human need that should be available to all individuals. Difficulty in communication is one of the more pervasive problems of students with severe handicaps. During the past two decades, we have seen the emergence of various augmentative and alternative communication symbols and systems as a viable means of communication by and with severely handicapped individuals (Fristoe & Lloyd, 1979; Kiernan, 1977; Kiernan, Reid & Jones, 1982; Lloyd, 1976, 1980; Lloyd & Karlan, 1984; Musselwhite & St. Louis, 1982; Schaeffer, Musil, & Kollinzas, 1980; Schiefelbusch, 1980; Schiefelbusch & Lloyd, 1974; Silverman, 1980). A statewide needs assessment showed that communication remains a high-priority inservice need among teachers and others concerned with the individuals with severe handicaps (Bryan, Pappas & Tracy, 1982). In 1984, at a Department of Instruction Peer Dissemination Network committee meeting, one community agency representative indicated that the greatest inservice need in her program was to teach staff a basic core lexicon of manual signs for use with individuals with severe handicaps. The principal of Murdock School and others agreed that this was a major need. Most of the current sign training materials and videotapes have been developed for use with people who work with deaf individuals and are therefore, unsuitable for use by those who work with students with cognitive impairments. Members of the committee suggested that the selection of appropriate signs and development of an inservice program were ideally suited to a cooperative project between Purdue University and a local school. The costs of the project, such as the development of materials, and the provision of substitute teachers to release regular staff to attend meetings and the inservice training workshops were funded by the Lilly Endowment Incorporation.

The specific objectives of the original project were as follows:

1. To increase the number of people in the school environment with whom a child with severe handicaps could communicate using manual sign.

2. To develop training materials, including the following:
   (a) a sign lexicon to be used with children with severe handicaps; and
   (b) ten videotape instructional /practice modules and a videotape sign dictionary which could be used for staff practice during the follow-up period and maintainance of the skills following the workshops.
3. To translate current research into a usable form for teachers and other service providers.
4. To form a working party composed of elementary school and university personnel to do the following:
   (a) plan and conduct manual sign inservice workshops for school staff; and
   (b) use evaluations of the inservice to revise the multi- component training package for use with personnel in other settings.

THE WORKING PARTY AND THE PLANNING PROCESS

In order to accomplish these objectives, the following project structure was developed. A working party, composed of Murdock School personnel (the school principal, one regular and four special education teachers, speech-language pathologist and parent) and Purdue University special education personnel (one professor and one graduate student) worked cooperatively to plan and develop the inservice training package. The working party is a decision-making group similar to the quality circles concept (Bacon, 1983; Bonner, 1982, 1983), in which teachers can be involved in making decisions that directly affect what is happening in their school and, as a result demonstrate increased commitment to the project. The efforts of the working party to develop the training package, i.e., the workshop content, format, materials and videotapes were facilitated by clerical staff at both Murdock and Purdue, and by graduate students.

SELECTION OF SIGNING APPROACH

During its first three meetings, the working party discussed whether a particular sign language (i.e., ASL) or system (i.e., Signed English, or Signing Exact English) would be used exclusively or whether signs would be drawn from different systems. It was decided that in order to meet the needs of the students that signs would be chosen from a variety of systems to best match the motor abilities of the students with severe handicaps and that, if necessary, signs could be modified to make them easier to produce.

The type of signing approach was also closely considered in these discussions. Many deaf education programs use "total" or simultaneous communication, i.e., speaking all words and signing all of the corresponding signs. However, considering that the sign vocabulary and language abilities of the students would be rather limited, the working party concluded that a signs-supporting-English (Sutcliff, 1983) or a key-word signing approach would be most appropriate.

VOCABULARY SELECTION

It is generally agreed that one of the most important factors to consider in selecting an instructional lexicon is functionality (Carlson, 1981; Fristoe & Lloyd, 1980; Karlan & Lloyd, 1983a; Reichle, Williams & Ryan, 1981). Functionality of a sign refers to the degree to which people view that particular sign as useful for communicating with a variety of people, in a number of different settings (Reichle, Williams & Ryan, 1981). Functionality has been mentioned by many people as contributing to how easily children learn manual signs (Fristoe & Lloyd, 1980; Kopchick & Lloyd, 1976; Reichle, Williams & Ryan, 1981; Stremel- Campbell, Cantrell, & Halle, 1977). Extrapolating from children's data to adult learners, the working party believed that functionality might influence the ease of sign acquisition in adults, also. Therefore, it was important to make sure that the signs taught in the workshops were highly functional. The working party decided that it was important to involve every staff member in the process of selecting the signs to be taught in the workshops. Staff members were asked to write down the fifty signs they thought would be the most helpful to them in their encounters with the handicapped students in their school. The 1063 vocabulary items generated in this manner were reduced to 612 items by combining synonyms and various syntactic forms of the same word.

Since the original impetus for this project was to have a highly functional sign training program with a limited number of sign vocabulary items, it was decided not to teach the learners to make related nouns and verbs in a slightly different manner. These grammatical distinctions of movement would typically be more important to people wishing to communcicate with individuals with deafness. By not teaching a distinction between nouns and verbs such as eat/food, bath/bathe, drive/car, the number of vocabulary items was reduced further. Then the working party members chose the most useful, generalizable signs, eliminating vocabulary items which were not as appropriate or functional for communicating with students with severe handicaps until the list was reduced to 274 vocabulary items.

Finally, instead of teaching the total 274 signs, the working party decided that only a total of 122 signs would be taught in the four workshops. In retrospect, this reduction in the actual number of signs taught turned out to be good decision because subsequent observation and feedback indicated that this number of signs was sufficient to facilitate the process of communication, and yet, not overwhelm beginning signers.

SIGN SELECTION AND MODIFICATION

After the vocabulary items were selected, the specific manual signs used to represent the lexicon were selected by a subgroup of the working party which chose a picture and description to represent each sign. Two American Sign Language (ASL) sources (Newell, 1981; Sternberg, 1981) and three pedagogical or manually coded English sources were used: (a) Signing Exact English (Gustason, Pfetzing & Zawolkow, 1980), (b) The Comprehensive Signed English Dictionary (Bornstein, Saulnier & Hamilton, 1983) and (c) Total Communication for Persons

with Developmental Disabilities (Arizona, 1981). The majority of the signs selected were common ASL signs.

Due to the physical limitations of a number of students, the handshape or movement of many signs was simplified. Simplification of manual signs has been advocated as a viable means for using signs with persons with developmental disabilities if others in the environment can understand these modifications (Arizona, 1981; Dennis, Reichle, Williams & Vogelsberg, 1982). When given the option of several acceptable ways to make a sign, the sign which was easiest to produce or to guess was chosen. For example, the sign NOW can be made with Y handshapes, which involves holding the middle three fingers down against the palms and extending the little finger and thumb. NOW can also be made with cupped open B handshapes with the thumb slightly extended and the four fingers naturally curved and held together. The cupped handshape was chosen because it was easier for learners to produce.

Occasionally, we were faced with the need to simplify/modify a sign or substitute a gesture for a particular vocabulary item to make the movements easier for learners to produce. The most frequent modifications included changing an asymmetrical movement to a symmetrical movement as in CRAWL and WET and using a simpler handshape as in WET and SOAP. CRAWL, usually made by bending the first two fingers of the right hand and using a crawling motion by alternating the "steps" taken by each finger, was modified so that the movement was symmetrical instead of asymmetrical for the students' ease of production. Since we felt that symmetrical handshapes were easier for beginning signers, we chose to use the same handshapes in signing WET, i.e., all four fingers of each hand touching the thumb (a flat O) instead of using the two different/asymmetrical handshapes usually associated with this sign.

The most frequent substitutions were substituting a gesture which was easier to recognize or produce than the corresponding manual sign, such as YES, NO , RUN, I DON'T KNOW and creating a sign which was easy to produce, such as SINK (made with two fists outlining the shape of a sink). To capitalize on previous learning, it was decided to use the conventional headshake and head-nod to indicate YES and NO instead of the manual signs for these concepts. Since the signs for RUN, and I DON'T KNOW, are motorically complex, a jogging gesture and the traditional shrug of the shoulders gesture were chosen to represent the concepts of RUN and I DON'T KNOW. In addition to gestures, a number of gesture-like signs were chosen for their ease of production. Gesture-like signs refers to signs which would be easily understood by people who are unfamiliar with manual signs, such as BABY (a rocking motion), CHALK (a mime of writing on the board with chalk) and CIRCLE (a tracing of the circle shape with the index finger).

In an attempt to increase the chance of early success by workshop participants, it was decided that the majority of the "easiest signs" be taught in the first and second workshops/modules. Each of the 122 signs to be taught was assigned to one of four workshop sessions based on a number of factors which have been reported to influence the ease of manual sign acquisition (Doherty, 1985; Fristoe & Lloyd, 1980; Karlan & Lloyd, 1983; Lloyd, Loeding, & Doherty, 1985). The following features were compared across all of the signs: the

translucency value, or the degree to which one can see a relationship between the sign and its referent when the meaning of the sign was known, the **handshape(s) used** and their **motoric difficulty level**, the **number of hands used**, whether the sign was **symmetrical** or not, whether the sign **contacted** another part of the signer's body or not and whether the sign was **visible** to the person making it or not. The following sections discuss how each of these features specifically related to organization of the sign modules.

Translucency. Translucency, a type of iconicity, refers to the degree to which a naive person can see a relationship between the sign and its referent after having seen the sign and knowing the corresponding English word. The empirical literature has demonstrated that signs with high translucency ratings are learned faster and remembered more readily than signs with low translucency ratings by college students (Doherty & Lloyd, 1983; Goossens, 1983; Luftig & Lloyd, 1981) and individuals with cognitive impairments (Doherty & Lloyd, 1983; Griffith & Robinson, 1980; Luftig, 1983; Synder-McClean, 1977). The literature is inconsistent with regards to the importance of translucency in sign production. Since the literature indicates that signs with high translucency ratings are more easily remembered, the working party decided that the first modules should be loaded with highly translucent signs.

Handshape and Motoric Difficulty. Handshape refers to how the hand is shaped or formed during the production of each sign. A theoretical model of handshape difficulty based on normal motor skill development has been proposed by Boyes-Braem (1973). She assigned each handshape used in American Sign Language to one of five stages of handshape difficulty. Using this model, the handshape difficulty of each sign was analyzed. Signs, such as BOOK and BAD (made with a flat hand) with Stage I and II handshapes were classified as "easy". Stage III signs such as TELEPHONE (made with a "Y" handshape) were "medium". Stage IV and V signs such as ROOM (made with an "R" handshape) and PUZZLE (made with an "X" handshape) were "hard". Nearly seventy percent of all the signs taught in the workshops were "easy" signs, with respect to handshape difficulty. Nineteen percent of the signs were "medium" and eleven percent were "hard". The first workshop was designed to ensure successful acquisition by selecting a very large proportion of signs (27/32) with easy handshapes and including only four signs with medium handshapes and one sign with a hard handshape. The second and third workshops also utilized this strategy. Since it was necessary to teach some signs with more difficult handshapes, most of these signs were taught in the final workshop and the total number of signs taught in that workshop was reduced accordingly.

Number of Hands Used and Symmetry. Number of hands used during sign production can be one or two. When two hands are used, the handshapes and movements could be symmetrical or asymmetrical. Although there have been no studies investigating symmetry with adult subjects, three studies with handicapped and non-handicapped children have yielded consistent findings that one-handed signs are not significantly harder to imitate and produce than two-handed symmetrical signs. Kiernan's imitation studies (1983, 1984) concluded that one-handed signs and two-handed symmetrical signs are not significantly different in terms of ease of imitative acquisition. Langlois (1982) also found no significant differences between the ease of learning or one-day retention for

one-handed versus two-handed symmetrical manual signs for normal five and six year olds. However, her study included no two-handed asymmetrical signs.

In a third study, Doherty (1985 b) investigated the effects of translucency and handshape difficulty in preschoolers' productions of one-handed and two-handed manual signs. No asymmetrical signs were included. She also found no significant differences between the productions of one-handed versus two-handed symmetrical signs. Because of the consistency of these findings, most of the 122 signs taught in the workshops were one-handed or two-handed symmetrical signs, with only twenty five two-handed, asymmetrical signs. These asymmetrical signs were introduced a few at a time throughout the modules (four in each of the first two modules, seven and ten in the last two modules).

Contact/No contact. Contact refers to signs in which the signing hand contacts or touches the other hand or a part of the body, such as the sign THINK. Previous studies (Doherty & Lloyd, 1983; Kohl, 1981; Lloyd & Doherty, 1983) have demonstrated that signs involving contact are easier to learn to produce than signs which do not involve body or hand contact (such as the sign ONLY). Therefore, the sign pictures which clearly showed the contact point, such as the SEE picture for BIRD, were chosen when there were several sign representations to choose from. Approximately half of the signs in each of the workshops involved signs which included contact.

Visibility. Visible signs are signs which are made in full view of the signer. Clinical reports have mentioned that visible signs seem to be easier to learn than signs produced outside of the signer's visual field (Dunn, 1982). Following this line of reasoning, a sign which is not visible to the signer such as THINK (made by placing an index finger on the right temple) would be more difficult to learn than the visible sign for TIME (made by placing an index finger on the left wrist). Almost all of the signs selected for inclusion in the workshops were visible to the person making them. Therefore, this factor was not considered as strongly as the factors already mentioned as signs were sequenced within the modules.

Semantic vs. Cheremic Similarity. Semantically similar signs are signs which are similar in meaning such as the "fruit" signs (BANANA, APPLE, ORANGE, etc.) but may be very different in how they are actually produced. Cheremically similar signs are physically made in similar ways (such as SCHOOL, and PAPER) and therefore, share many sign parameters such as **handshape** used to make the sign, **movement** of the sign, **palm orientation** or **location** of sign. Mills and Weldon (1983) investigated the effects of categorizing signs into semantic versus cheremic groups, on recognition of manual signs in naive, normal adults. Semantically grouped signs were recalled with significantly fewer trials than cheremically similar signs. In a related study, Fuller and Wilbur (1986) replicated these findings and stated that even the addition of cues supposedly designed to facilitate recall of each handshape failed to significantly improve normal adult recall of cheremically similar signs. Therefore, in the workshops, the effect of semantically similar signs was maximized to make acquisition easier, by including many sets of signs which have semantic relationships. To reduce confusability of signs, every attempt was made to ensure that signs which shared a number of features were **not** taught in the same session.

DEVELOPMENT AND SEQUENCING OF WORKSHOP CONTENT AND ACTIVITIES

Following the selection of vocabulary items and after an extensive discussion about timing options, the working party determined that two sets of workshops were needed. It was important that only half of the staff come to each set of workshops because we wanted to limit the number of substitute teachers in the building (i.e., half of the teachers would be on duty while the other half were participating in the workshop). Due to the time needed for development of videotapes and materials, two sets of four inservice workshops were planned for late March to early April, each having four half-days during which school staff (teachers, aides, custodians, support staff, parents, and bus drivers) would learn a functional core vocabulary of manual signs. Although the working party would have liked to have the inservice training in the fall to allow more time for implementation of the sign training during the school year, it decided not to wait until the following fall to conduct the workshops. It was felt that spring workshops would capitolize on the interest which had been generated during the year. The principal was responsible for the assignment of staff to one of the two sets of workshops. This ensured that there would be a mixture of really enthusiastic people and a few who were skeptical or reluctant in each set of workshops.

A subgroup of the working party determined the proposed content of each workshop session. Approximately two-and-a-half months prior to the workshops, this group brainstormed about topics to include, in addition to merely teaching a number of signs for each day. Topics such as visual communication, gesturing, ways to interact with students having severe handicaps, the importance of facial expressions, the use of speaking and signing certain words at the same time (key word signing), and the use of modified or adapted signs by children with handicaps were felt to be vital to ensure proper use of signs with these students. Later, these topics were assigned to be discussed during a particular workshop session based on a logical progression of ideas. Next, the subgroup chose or invented activities to accomplish the objectives for each day, using some ideas from other sign training programs such as the Irish LAMH system (1984). Finally, the draft of content for each workshop session was presented to the whole working party for suggestions and final approval.

DEVELOPMENT OF MATERIALS USED IN WORKSHOP ACTIVITIES

A salient feature of these sign training sessions was the extensive use of an overhead projector. Signs were initially introduced in a large group setting of twenty-five to thirty people. There were four or more assistants circulating to give feedback and models to the participants. Numerous transparencies of signs were used during each session to further aid participants in learning the signs. A combination of humorous portrayals of signs and regular drawings of signs which corresponded to the sign drawings in the printed sign booklets were used. The humorous transparencies generally accentuated an iconic feature of the sign.

Information about visual communication, gesturing, ways to interact with children with severe handicaps, and the importance of facial expressions were also presented with the help of an overhead projector. Important issues, such as key word signing, the use of modified or adapted signs by handicapped children, and the description of signing space were all demonstrated to the large group.

Teachers volunteered to prepare the actual teaching materials used in the workshops on their own time. Fortunately, some activities required very little in terms of actual materials: (a) a game in which an imaginary shape was passed from person to person to use in a mime (this was used as an "icebreaker" or introduction at the beginning of the first workshop), (b) a role playing activity,, (c) a game in which the sign trainer produced a sign and the participants guessed what it meant, and (d) an opportunity for participants to evaluate their own sign skills using a questionnaire.

Other activities included games dealing with opposites, definitions, word associations, word pairs, sequencing sentences and drawing pictures which had been described using signs. For further explanation of these games, see Appendix A.

DESCRIPTION OF THE WORKSHOPS

Workshop participants included all staff members from the Murdock Elementary School including teachers, teachers' aides, administrators, itinerant teachers and support staff. Support staff included the nurse, secretaries, food hostesses, bus drivers, and custodians. In addition, parents were invited to attend with the understanding that it would be necessary to attend all four workshops since the content of the information presented and the development of manual signing would be cumulative.

The students continued to attend their usual classes during the time of the workshops with substitute teachers in charge of half of the classes on each of two days per week for four weeks. Spring vacation occurred between workshops two and three causing a break in workshop continuity.

Each set of four workshops had twenty-five to thirty participants who were divided into three groups for small group activities. In addition to the large group leader, two small group sign instructors (the school's teacher of the

hearing impaired and speech-language pathologist) assisted in each session. Schedule conflicts and emergencies necessitated some personnel changes among small group instructors. The additional small group leaders included the school's interpreter for the hearing impaired, and two speech/language pathologists.

The project coordinator, who was also the large group leader, had the responsibility of organization and preparation of the small group leaders. Prior to the workshops, the coordinator shared suggestions and information from Pre-Sign Language Motor Skills (Dunn, 1982) which dealt with how to teach signs to adults, and common production errors in signing. Each instructor also received all of the appropriate sign picture booklets and some pages of "filler" activities to use if their small group finished before the other groups.

During large group instruction, all of the instructors circulated through the twenty-five participants and gave them corrective feedback and further instruction on their imitations and productions of signs as they were being taught. This technique was designed to increase the involvement of the workshop participants.

Following large group instruction, the instructors conducted predetermined sign activities in their own small groups of (seven to nine) people. After each small group activity, the instructors made progress reports to the large group instructor to indicate particularly difficult signs or questions which were raised by their group members. When the large group reassembled, these difficult signs were reviewed, and questions and answers were shared with the large group.

DEVELOPING PRINT MATERIALS

At the conclusion of each workshop, each person received a printed booklet which included an alphabetical list of signs taught that day, pictures of those signs, arranged in the order which they had been taught (semantically related groups), and a homework sheet with suggestions on how to practice during the week. Occasionally, it was necessary to modify a sign picture to reflect a motoric simplification. Likewise, alterations of existing descriptions of signs were made to clarify and accurately reflect the sign modifications mentioned above.

Upon completion of the set of workshops, each participant was given a certificate of completion and a copy of this certificate was added to each person's personnel file. In addition to these materials, post-workshop comments on evaluation forms led to the creation of an alphabetical glossary of all of the signs in Modules one through nine which was made available for each classroom.

CONTENT AND TYPE OF VIDEOTAPES

Originally, the grant proposed a series of ten tapes, however as the project progressed, a need for three more tapes developed. The final set of thirteen tapes includes an Introductory tape which explains and demonstrates the format of the tapes, key-word signing, name signs, the numbers (1 to 10), the alphabet and fingerspelling rules and other material such as a caution against using spelling

with students with severe handicaps. The format of the next eleven tapes (One through Eleven) includes demonstrations of each sign (with and without the spoken word), pauses for practice of individual signs, demonstrations of signed sentences and dialogues, and a review segment in which the viewer is asked to recognize and to produce the nine to twelve signs just learned.

Tapes One through Four correspond to the signs learned in the four workshops and included what the working party had determined to be the 122 most basic signs and are roughly sequenced in terms of ease of learning. Tape Five includes what was considered the next most basic 51 signs. Since much of the specialized vocabulary needed by specific staff members is not included in the first five tapes, Tapes Six through Eleven were designed to meet the needs of certain groups of staff members. Tape Six was specifically designed for bus drivers, food handlers, and custodians. Tape Seven was designed for special education teachers and aides. Tape Eight includes signs of particular interest to regular educators, while Tape Nine concentrates on signs to help the support staff members with their vocabulary needs.

During the process of collecting the vocabulary items from the staff and conducting the workshops, it became apparent that some of the staff wanted to learn more academically oriented and other special signs to use with students having higher cognitive abilities, most of whom had hearing impairments. Therefore, Tape Ten was prepared for the coaching staff to use during intermural sports activities and included such signs as GUARD, FULL COURT PRESS, and FORWARD. Tape Eleven was designed primarily for use in the library and included signs for REFERENCE section, AUTHOR, and CARD CATALOG. The final tape in the series is a comprehensive, alphabetical video-dictionary of all of the signs from Tapes One through Nine which was prepared for staff members to consult or refer to as needed.

EVALUATION

From its inception, this project had several evaluation components incorporated within it. Pre and post questionnaires were used to sample levels of interest in manual sign training as well as to obtain information on skill and "comfort" level of manual sign usage by the staff. Throughout the project, observational data were collected on various facets of student/ staff communicative interactions. Evaluation forms were completed by all participants at the end of each workshop. Viewers of the videotapes also completed evaluation forms.* An extensive workshop evaluation was conducted three weeks after the last session which yielded information concerning the perceptions about the project's aims, and outcomes, as well as anticipated benefits and suggestions for future training needs.

The workshop and videotape evaluation forms were developed to give specific feedback to the working party relevant to each workshop and its components and each tape and its components. This information facilitated revisions in an effort to upgrade all components of the inservice training package before its dissemination.

The evaluation data are still being analyzed and will be reported in subsequent papers, but initial findings are discussed in the following four sections in this paper.

EVALUATION OF THE WORKING PARTY PROCESS

Members of the working party evaluated the working party process several times during the 1985-86 school year. In most instances, a five-point Likert scale was utilized to determine whether group members agreed or disagreed with statements dealing with the group's dynamics. Some of the parameters evaluated via that rating scale included effectiveness of the team approach, open-mindedness of the group members, leadership, support, ability of the group to resolve controversy, cohesiveness of the group, and clarity of group goals.

Group members also evaluated statements which related to their own role in the group. These factors dealt with such concepts as frequency of participation, degree to which they felt free to participate, to propose solutions, and disagree with others, whether they felt that they made contributions to team decisions, and their feelings about their presence being necessary.

Although there was some variability in the responses, group members generally rated these factors positively (i.e. indicated that they strongly agreed with the statements for each of these factors).

EVALUATION OF THE FOUR WORKSHOP SESSIONS

At the conclusion of each workshop, participants anonymously rated the session they had just attended. The information from these evaluations was utilized to modify subsequent workshops when necessary and feasible. A post-workshop evaluation was also completed approximately three weeks after the last workshop.

The questionnaires used in the evaluations were carefully designed to reduce tedium and promote accurate reporting of information. For example, the participants used the following rating scale to evaluate continuity of the materials; "The instruction on selected manual signs was ... a dense fog" (on one end of the continuum) ... to ... "clear as a bell" (on the other end).

Information was collected on a number of different themes, including group leaders, workshops, activities, videotapes, and other materials, as well as on aspects such as pacing of instruction, instructional goals, importance of the project, selected sign vocabulary, staff involvement, ease of learning, attitudes, and future plans for manual sign use.

The strengths of the workshop package as identified by these questionnaires included leadership of sign instructors, preparation, general atmosphere and the small group activities. Limitations cited by the participants included insufficient number of workshops, short duration of each workshop, and insufficient time spent in the small groups to engage in spontaneous signing practice and dialogue practice.

With respect to large and small group leaders, participants judged them to be effective, efficient and flexible. They were found to be friendly and easy to understand also. According to the participants, the leaders attended to individual differences while maintaining group involvement. They were enthusiastic, interested in participants' progress and motivating.

In general, the activities of the workshop were found to be very helpful, motivating and enjoyable. Activities which received the highest ratings on "helpfulness" were role-playing situations, question and answer periods, and practice on individual letters and words.

The materials (sign booklets, overheads, etc.) were highly rated both in content and in quality. They were also judged to be clear and interesting. Illustrations of manual signs and the alphabet chart were rated as the "most helpful", or "very helpful" by a large majority of the participants.

Many evaluation forms contained suggestions for additional components to include in future workshops, such as inclusion of adults and children who use manual sign to communicate so that the learners could practice communicating directly with experienced handicapped signers and so that these handicapped individuals could offer suggestions and comments during the workshop. In a similar vein, a participant suggested inviting parents of students who use manual signs to discuss communication. Although the suggestion was made to include handicapped children in the workshops, several people felt that a more feasible option would be to make a videotape of children with severe handicaps using signs, with a voiced translation of what each child was signing so that participants could get a better feeling for how these children form signs differently.

EVALUATION OF COMMUNICATIVE BEHAVIOR

In order to document the effectiveness of the workshop training package, observations of communicative behavior were conducted with 27 school staff members and 12 special needs students using six different observation forms. Four undergraduate and four graduate students observed a total of over 300 five-minute intervals, over a period of 18 months. These observations recorded specific aspects of communication on a pre- intervention, post-intervention, and follow-up basis.

Every effort was made to obtain reliable information on as many staff members as possible, including special and regular education teachers and aides, speech-language pathologist, OT/PT aide, principal, custodian, food handlers and bus drivers. Students were chosen from each of the four special education classrooms based on the representativeness of their communicative abilities.

As follow-up data collection is still being conducted, data analysis is not yet complete. However, the following trends have been identified. There has been a general increase in manual communication (including signing, gesturing, pointing) among staff and students. With respect to the number of signs used per

communicated utterance and sign intelligibility, three groups seem to have emerged.

a) Individuals, such as the teacher of the hearing-impaired, who used signs accurately and appropriately prior to the workshops. Few changes were expected in these individuals, and few have been demonstrated.
b) Individuals who use the sign skills taught in the workshops to some degree in the course of the school day. These individuals have maintained their sign intelligibility skills, and have evidenced a desire to expand their manual communication skills.
c) Individuals who have not demonstrated a significant increase in their signing skills since the workshops. This group includes those who have regular contact with communicatively impaired students, and those who do not.

Interestingly, among the latter two groups, job classification was not a discriminative factor. That is, almost all job categories were represented in each of the two groups; those who use their sign skills, and those who do not.

EVALUATION OF VIDEOTAPES AND THEIR USE

When staff went to view a videotape at school they also completed an evaluation form concerning that videotape and an answer sheet for the review segments. Comments on these evaluation forms were compiled and used in making decisions about how to revise the videotapes. Generally, the clarity of the signs on the tapes was rated as excellent. On initial ratings completed after the workshops, a number of pacing features of the tapes were rated "just right". However, after a few months, these same features were generally rated as "too slow/ too many repetitions", presumably because the signers had improved with practice. The review segment and dialogues were viewed as being "helpful" to "very helpful". Signed sentences received a range of ratings from "fair" to "excellent".

Revisions were incorporated into the last four videotapes (Module 6, 7, 10, and 11). These revisions included shorter pause times for the practice of individual signs, and longer pause times for the practice of phrases and short sentences. The use of character- generated letters to display the practice phrases on the screen while the viewers were attempting to sign them was especially helpful because it eliminated the need for the learner to try to remember **both** the phrase and the signs for the words in the phrase.

When participants initially responded to questions about their use of the videotapes, after the first workshop, about half (48%) of the participants stated that they planned to use the videotaped modules. By the last workshop 36% of the participants reported that they felt the need to view the videotapes, but only 15% had actually done so by the end of the school year. Many respondants stated that the busy end-of-year activities prevented them from viewing the tapes. It is interesting that approximately 70% of the participants considered the videotapes an important component of the total workshop package.

Following the workshops, the videotaped modules have been used in a number of different environments including special and regular education classrooms, informal teachers' gatherings, and regular staff meetings. This supports our original intention for the videotapes, i.e., to serve as a resource for the staff who had forgotten certain signs or who wanted to learn signs which hadn't been taught in the workshops.

Several viewers suggested incorporating the videotapes into future workshops. These individuals felt that if the school staff had been exposed to some of the actual videotapes so that they could see the format and some of the content, the staff would have demonstrated greater use of the tapes in between workshop sessions and following the series of workshops.

SUBSEQUENT USE OF THE INSERVICE TRAINING PACKAGE

Following the summer vacation, many of the teachers expressed a need for a review of the signs they had learned. They arranged to meet during a number of their lunch periods to view the sign videotapes which had been made for this purpose. In addition, they frequently consulted the teacher of the hearing impaired who taught in the building and the project coordinator who made periodic visits to the school.

The excitement generated by the inservice workshops was soon felt in some aspects of the larger community. The local public library has encouraged their children's librarians to go to the special education classrooms to bring books and read to the students who might not have an opportunity to visit the library otherwise. These librarians asked for and received training in how to use manual signs in their work from a member of the working party. The project coordinator was invited by the teachers at Murdock to conduct brief periods of sign instruction in most of the regular education classrooms. It was gratifying to notice how many signs the students had already learned from the participants in the workshops and from their fellow students with handicaps who used signs to communicate. Another member of the working party has visited a nearby elementary school which had expressed an interest in the project and has conducted sign instruction for a number of classes of regular education students ranging from kindergarten to sixth grade.

In the upcoming school year, there are plans to offer sign training to the firefighters and police officers in the community because of their involvement with special education students in firedrills or emergencies. There will also be another series of four shorter workshops offered to teachers to help them incorporate the use of manual signs into their classrooms.

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APPENDIX

A LIST OF ACTIVITIES USED IN THE WORKSHOPS

1. CHANGE THE STICK - an icebreaker in which participants pass an imaginary shape (such as a stick) from person to person and mime different actions for that shape or change the shape and carry out an action.

2. ABC FLASH CARDS - an activity in which participants must name the letter being signed on the flashcard or form the letter correctly without looking at the pictured letter.

3. HANDSHAPE PRACTICE - Each participant individually produced a handshape just learned and received corrective feedback from the sign instructor. This process continued until all handshapes had been practiced by all participants.

4. CHAIN SPELLING - One participant would fingerspell a letter to another participant and that participant had to fingerspell and say the letter outloud. Then that participant would fingerspell another letter to a different participant and the process would repeat itself. Soon, participants began to spell short words to each other.

5. DICE/BOGGLE GAME- Participants rolled letter dice and spelled as many words as they could using fingerspelling instead of dice.

6. GUESS THE MEANING - The sign instructor signed an easy-to-guess concept and participants had to guess what that sign meant.

7. PLASTIC EGG VOCABULARY- an activity in which one or more written vocabulary items were placed in each plastic egg and each participant chose an egg and signed the vocabulary item. Other participants could guess what the person was signing.

8. CLEVER QUESTIONS - The sign instructor asked questions to the participants (as a group) which could be answered using the signs they knew.

9. DEFINITION GAME - Each participant chose a card with a dictionary definition of a sign just learned and had to sign the appropriate word.

10. PAIRING WORDS - Each participant drew a card with a certain word on it. The participant's task was to think of another sign that "went with" that word and sign the two word phrase (such as BLUE CAR or COME IN).

11. OPPOSITES GAME- Each small group divided in two and each group took turns signing concepts to the other group. When one antonym was signed it was the responsibility of the other group to sign a sign with an opposite meaning (e.g., UP and DOWN)

12. MAD LIBS - A humorous written story with a number of words left out was passed out to each participant. The task was to fill in the blanks with signs they had recently learned.

13. SENTENCE SEQUENCES - Each participant received one sentence which was part of a short story of four or five sentences. The task was for participants to arrange themselves/ their sentences in the proper order without speaking. Signing was encouraged. When participants thought they were in the correct order, they signed the complete story to the sign instructor.

14. DRAW THE PICTURE- The sign instructor described a concealed picture to the participants using signs. The participants had to draw the picture as correctly as they could.

15. ROLE PLAY - Participants were given time to act out (using manual sign) suggested situations usually involving a child and adult in a school situation.

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